



With the Author's Compliments.

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DISCOLORATIO UNGUIUM: (1) LEUCOPATHIA UNGUIUM;
(2) UNGUES FLAVI.

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(1) LEUCOPATHIA UNGUIUM.

THE following is an interesting example of the above disease, which occurred in a man who presented himself at the St. John's Hospital for Diseases of the Skin, London, suffering from scabies. A healthy man, aged 25 years, a hairdresser by occupation, who stated that for some fifteen years he had noticed transverse white bands appearing and disappearing on each of his finger-nails. The bands generally commenced at the base of the finger-nail, and gradually with the growth of the nail moved towards the free end. He stated that occasionally a band would appear or disappear more or less suddenly on any part of the nails. For instance he would wake up in the morning and find a new band which was not present on the previous night. These acutely arising bands generally appeared towards the free end of the nails.

At the time he came under my observation, with the exception of the nails of the left little finger, and the ulnar half of the ring finger of this hand, all the finger, and both the thumb-nails were affected; each nail had one, two or three, more or less complete even bands right across the nail, as is well shown in the accompanying photograph. The area of the left ulnar nerve distribution was unaffected, there being a marked band on the radial half of the nail of the left ring finger, but none on the ulnar half of this nail, nor on that of the little finger. I observed that a distinct band which was present and showed very clearly in the photograph which was taken on December 12th, on the nail of the right little finger, had quite disappeared by the middle of the following January; the other bands had remained much the same, and no fresh ones had appeared.

The nails of the toes were affected to a lesser degree; they were

mostly thickened, ribbed, and had a tendency to grow over at the extremity. Bands were present on some of the nails, but they were much less distinct than those on the fingers.

As regards other epiblastic tissues, the teeth were small, ill-developed, discoloured and carious. The hairs from the dorsum of the fingers were a little atrophied. Those from the head were more or less normal in character.

Microscopical examination of sections of these nails, which had been decalcified by nitric acid and stained with safronin, showed that the band regions took the stain very readily, and appeared to be a mass of partly cornified layers of cells in several strata, with spaces between. Large cells which had retained their nuclei were clearly definable.

This condition appears to reveal the fact that the cells and tissues in the regions of the white bands took the stain more readily and showed the structure of the nail-cells, which had mostly retained their nuclei, and therefore had not undergone keratinisation like the cells of the normal nail-structure.

There were several spaces between the laminae of the matrix substance which might be mistaken for air-spaces, but were, I believe, produced by the razor when cutting through structures of unequal density.

The disease might therefore be described as a trophoneurosis, leading to nutritive changes in the nail-substance.

I should therefore describe the condition of bands to be due to a failure of the natural process of cornification. The histology of these bands is more or less that of the normal lunula of the nail, the cells of which, being more or less opaque, prevent the vascular bed of the nail-matrix being shown through the nail-substance, hence its whitish appearance in contrast to the pink colour of the rest of the nail.

If this explanation of the pathological condition is the correct one, it is easy to understand how these bands may rapidly disappear, by a process of natural cornification of their cells, as in the case I have described. It is, however, quite a different matter to explain the more or less sudden appearance of bands towards the free margin of the nails, but I consider the patient's statement as to this phenomenon requires confirmation, as I did not observe this to happen while he was under my observation. It is quite probable that a band close to

the base of the nail might remain for some time unnoticed, and that only when it approached the middle or top of the nail that the attention of the patient would be drawn to it, and his conclusions, therefore, as to its origin, quite false.

This curious and somewhat unusual pathological condition of the nails is also known by the following names: Achromia unguium, Leuconychia, Albugo, Flores unguium, white spots, white nails, gift



or fortune spots, lies, etc., and to the French as *décoloration des ongles*.

The varieties of this condition are generally grouped under the heading of Atrophia unguium, but I consider they should form a distinct class, as there does not appear to be any atrophy or malformation of the nail; in fact, in most of the cases which have been described, especially those accompanied by photographs or drawings of the condition, the nails themselves are well developed, and well preserved, and it is only in the remarkable coloration that anything abnormal shows itself.

I would describe two subdivisions of the condition :

(1) The congenital and permanent, which may be associated with changes in the hair, and possibly of the teeth.

(2) The acquired and more or less temporary, in which the hair and teeth do not reveal anything abnormal.

The case I have described was probably an example of the congenital type.

The following are the cases of this condition previously published :

Langdon Down (1) described the case of a professional man who had two distinct sets of white lines extending transversely right across his fingers and toes, especially marked on those of the left side, which followed two attacks of nervous breakdown. These illnesses were accompanied by corneal ulceration, intermittent heart's action, and great general nervous prostration, the result of over-work. The lines in the nails corresponded with the times of the occurrence of the two distinct attacks of illness.

Morris Longstreth (2) wrote a paper entitled "Changes in the Nails in Fever," in which he described some white bands which

appeared in his own nails, after an attack of relapsing fever, and which bands occurred at the time of each relapse.

De Costa (3) at the same meeting showed a case of a boy, aged 13 years, who had recently recovered from a prolonged attack of typhoid fever with relapses, and who developed white bands on his nails, which he then described as "anæmic streaks." Associated with the bands were alterations on the surface of the nails, which were slightly ridged, and so the transverse bands could be felt as well as seen. Similar, but less distinct marks, were present on the toe-nails.

Morrisson, of Baltimore (4), published the case of a man, aged 20 years, who suddenly developed bands on his finger-nails, and these disappeared after a few months. The plate shows that the bands were not completely across the nails, but only in irregular wavy lines. The toe-nails were not affected.

Bielschowsky (5) reported the case of a man suffering from multiple neuritis, in whom white spots appeared on the lower part of the finger-nails, which spots rapidly grew and coalesced into bands extending across each nail. The bands were milky-white in the centre, and became paler and more pink towards the ends. The nails of the toes were not affected.

Unna's case (6), described as one of leuconychia and leucotrichia, was probably congenital, and the hair of the head presented a partial appearance of the condition known as ringed-hair. It occurred in a man, aged 26 years, a joiner by trade, who stated he noticed the changes in his nails when he was a child. After an injury, when he was eleven years old, the nails of the two injured middle fingers became red, but afterwards they assumed their natural colour. He never had any inflammatory mischief of the nails, and he believed them to have been congenital. The toe-nails were not affected.

Herman Lawrence (7) records a case of an apparently healthy middle-aged man which was probably congenital. The nails on the fingers of this patient's son, who was five years of age, presented a similar appearance, but not so marked a degree as those of the father.

Stout (8) described the case of a man, aged 21 years, a waiter, who had some scrofulous glands, and was in a somewhat nervous condition. He had wavy white lines and spots on the nails of the

fingers, and to a lesser degree on the toe-nails. The bands were constant and probably congenital.

W. Sykes (9) stated that in his own person he could produce white specks on his finger-nails by scraping, pressing back, and cutting the fold of the nail over the lunula.

Heidingsfeld (10) collected seven cases, six of which were in young women, from sixteen to thirty years of age, all of whom manicured their nails assiduously, and the bands or striæ were most marked on the nails of the right hand, that is, on those the more liable to injury by unskilled manipulation by the left hand. He considered that all of his cases were the result of injury to the nail-fold by manicuring operations.

Unna makes three divisions of this condition, which he designates as follows:

- (1) *Leuconychia punctata*: white spots.
- (2) *Leuconychia striata*: white bands or striæ.
- (3) *Leuconychia totalis*, which condition involves the nail in its entirety.

Although in some of the cases recorded the temporary occurrence of white bands is clearly demonstrated to be the result of a general constitutional disturbance, such as typhoid fever, relapsing fever, nervous breakdown, etc., the pathological result is quite different from that much more common condition of transverse furrows or ridges on the nails corresponding to a period of illness of an acute character, such as after many fevers, measles, typhoid, pneumonia, etc., during which attack there is a consequent malnutrition and arrest of growth of the nails, stated to be most marked on the thumbs, and next on the index fingers.

Changes in the nails accompanying general illness were first described by Reil, of Halle (11), in 1792, and again more fully in his work *On the Diagnosis and Treatment of Fevers* (12), published in 1804. Bean (13) in 1846 also drew attention to the subject, and calculated that the nails of the fingers grow at about the rate of a millimetre a week, which for an average nail would mean five months, for a whole nail, or rather more than two nails a year. The nails of the toes grow more slowly; that of the great toe takes four times this period. It becomes, therefore, a matter of easy calculation to fix the date of an acute illness or illnesses by the relative position of furrows on the nails.

Samuel Wilks (14), in the *Lancet* of 1869 and 1870, recorded several cases of furrows on the nails as the result of acute illness, such as in a case of severe diarrhœa accompanied by great prostration, scarlet fever, a sharp attack of gout, acute rheumatism, diphtheria, and one after starvation. His most remarkable case (15) was that of a healthy, well-developed, robust man, who, on August 29th, and again on October 18th of the same year, suffered for three days from severe sea-sickness, after which all the nails on both his hands showed two distinct furrows, the position of which corresponded to the dates of the two attacks of sea-sickness.

Murchison, (16), in the second edition of his work on *Fevers*, also drew attention to the subject.

Hutchinson (17) described furrows on the nails, especially after febrile and gouty attacks of illness, and records a case where bands of hæmorrhage appeared in the nails after one illness and furrows after another. He considered that white spots were often due to picking back the nail-fold, and might co-exist with similar white spots on the teeth. In relapses, for instance, in cases of typhoid fever, a second furrow might appear on the nails as a record of the fact. An analogous condition occurs on the hoofs of animals after severe illness, and the horns of cows often show a similar change after each parturition. The same markings have been observed on the wing- and tail-feathers of domestic fowls and other birds in captivity. Unna and Joseph (6, 19, 20, 21) consider that in microscopic examination of these cases the nails reveal the presence of air-spaces in the nail-substance, and hence the white colour similar to those which have been described as being present in white hairs. According to Giovannici (18) the condition is due to abnormal cornification. Heidingsfeld (10) states that the white bands consist of cells which retain their nuclei, stain freely, and preserve their original form, due to failure to undergo physiological keratinisation and not to infiltration of air. He says that leuconychia is the result of some pathological change of the structure in the plane of the nail-cells, approximating a failure of the affected cells to undergo normal physiological keratinisation. The causes may be traumatic, malnutrition, febrile disease, neuroses, or any agency which disturbs the growth, development or keratinisation of the matrix-cells in their change into nail-substance.

(2) UNGUES FLAVI.

The following is a case of Ungues flavi, that is, nails of a yellow-ochre colour, which has recently been under my observation. The patient was a fairly healthy, somewhat nervous type of young man of frail build, aged 23 years, who two years previously, in October, 1908, had contracted syphilis. He had had a chancre followed by an ulcerated fauces and a general adenitis, but no secondary rash.

He had been strictly under mercurial treatment by grey powder in pill form from the earliest sign of the disease. In September, 1909, these were replaced by hypodermic injections of succinimide of mercury, somewhat irregularly, about twice a week. He had never been salivated or shown any evidence of mercurialism. At the time the nails underwent the change, I am about to describe, there were neither signs nor symptoms of the previous disease about him, and in October, 1910, the Wasserman reaction was negative.

During the month of June, 1910, the nails of the fingers and of the thumbs on both hands were becoming discoloured and assuming a uniform yellowish tint. The change was slow, but after a few months the nails were all of a deep yellow-ochre colour and noticeably thickened throughout, but they remained quite smooth and even on the surface. The toe-nails also showed evidence of the same pathological changes, but to a lesser degree. In most of the finger-nails the lunula had completely disappeared by January, 1911, and all the nails were still thicker and of a deeper yellow-ochre colour.

They had the appearance of being stained by nicotine, as is often seen in inveterate cigarette smokers, but this patient smoked but very little, and all the nails on both hands were equally affected, and there was no staining of the neighbouring skin of the fingers. There was no jaundice at any time present.

During the whole of this period there was almost complete arrest in the normal growth of the nail in length, but all the time they were growing in thickness, in fact it might appear that the natural growth in length was replaced by an unnatural increase in thickness.

In March of this year a specimen of the left index nail was taken for microscopical examination.

He ceased the mercurial treatment at the end of 1910, and commenced taking small doses of iodide of potassium in January,

1911, first in the form of the pure salt, which he did not take well, and so it was replaced by ioglidine tablets, which he took without any unpleasant symptoms. I prescribed a salicylic acid ointment to be applied to the nails.

By the end of March there was a marked improvement in the condition of his nails. The natural colour was gradually returning, and the lunulæ, which had completely disappeared from all the nails, was reappearing on some of them. The improvement, or return to the normal condition, first showed itself at the proximal or base of the nails with the reappearance of the lunula, and at the time I examined the case at this stage, there was a marked line of demarcation between the normal and the pathological condition across some of the lunulæ, especially marked on the nail of the right index finger, showing that the return to the normal growth had been more or less sudden in its appearance.

When seen again, about the middle of July, the nails were practically normal, and a few weeks later quite so, both as to the coloration and thickness.

There was no obvious change noticed in the hair, except that it was coming out a good deal, and he was getting rather thin on the vertex.

Microscopical sections through the free end of the nail, which had been decalcified with nitric acid, and afterwards stained by Gram's method, showed there was considerable increase in thickness of the whole nail, and the centre and deeper layers of the nail-matrix took the stain but very slightly. The superficial layers of the nail-substance took the stain fairly well, and revealed the presence of large, well-defined, nucleated nail-cells. The cells of the deeper layers were much less defined, but there was no evidence of any gross structural change in the planes of the nail-substance.

The questions that naturally arose as to the aetiology of this condition are, was it an unusual feature of syphilis, or due to the mercury? The general state of the patient's health at the time was not quite satisfactory, but there was no obvious lesion for diagnostic purposes.

So, again, was the return to the normal due to taking of the iodide, as he was taking iodide of potassium and ioglidine tablets all through the period of the improvement?

In the *International Atlas*, of 1891, von S. Giovannici (18) pictures

and describes a case of white nails under the title of "*Canities unguium*," which he saw in a coachman, aged 29 years, and of a robust constitution. The whole of the nails were white, in fact nearly an ivory-white colour and well preserved. The condition came on at the age of twelve years after a moderately severe attack of typhoid fever. Histologically he detected the presence of air in the nail-matrix, and he considered the condition analogous to the deterioration of the nails which is characterised by white opaque spots in the shape of dots, or of transverse stripes. The nails of the toes were not affected.

Judging by the plate published of this case, the whole nail appears to have assumed the colour, texture, and condition of the lunula of the nail in its normal condition, but possibly the whole matrix was thickened.

It is known that the nails of convalescents from malignant fevers may become white for a time, and that the nails of a chalky hue have been described in paralytics.

Max Joseph (19) recorded a case of white nails occurring in a healthy man, aged 20 years, a butcher, whose finger-tips became swollen and painful; after this subsided the nails turned partly white, and later on he published a second case (20) in a young girl suffering from anæmia, and later published an interesting article upon "*Diseases of the Nails*" (21).

Parkes Weber and Creig (22) described the case of a man, aged 52 years, who had also rheumatic valvular disease of the heart. He had noticed that his nails had become white for some four years. All the finger-nails were white, and no lunula were visible; they were rather flat, and one was almost in the condition known as spoon-nail; they were also somewhat thinner than normal, and presented longitudinal grooves. The condition was less marked on the toe-nails. The patient also had some chronic rheumatoid deformity of the small joints of his hands and feet.

Professor E. Geber (23) published in 1885 an article entitled, "*Discoloratio unguinum: Morbid Changes of the Nail and its Bed*," in which he said that in cases of cyanosis and during attacks of intermittent fever the nails became livid. In convalescence from feverish attacks white, in anasarca light white, in icterus yellow, in consequence of apoplexy dark brown, in hectic conditions pale, and with certain diseases of internal organs grey.

LITERATURE.

- (1) DOWN.—*Trans. Path. Soc.*, London, 1870.
- (2) LONGSTRETH.—*Trans. Coll. Physic.*, Philadelphia, 1877.
- (3) DE COSTA.—*Ibid.*
- (4) MORRISSON.—*Vierteljahr. f. Dermat. u. Syph.*, 1888.
- (5) BIELSCHOWSKY.—*Neurologisches Centralblatt*, 1890.
- (6) UNNA.—*Internat. Atlas of Rare Skin Diseases*, 1891.
- (7) LAWRENCE.—*Australian Med. Journ.*, 1893.
- (8) STOUT.—*Med. News*, Philadelphia, 1894.
- (9) SYKES.—*Brit. Med. Journ.*, 1897.
- (10) HEIDINGSFELD.—*Journ. of Cut. Dis.*, 1900.
- (11) *Reil's Memorabili Clinicorum Fascicul*, Halæ, 1792.
- (12) REIL.—*On the Diagnosis and Treatment of Fever*, 1804.
- (13) BEAU.—*Archives Générales de Médecine*, 1846.
- (14) WILKS.—*Lancet*, 1869 and 1870.
- (15) WILKS.—*Trans. Path. Soc.*, London, 1888.
- (16) MURCHISON.—*On Fevers*, 2nd ed., 1873.
- (17) HUTCHINSON.—*Med. Press and Circular*, 1889.
- (18) GIOVANNICI.—*Internat. Atlas of Rare Skin Diseases*, 1891.
- (19) JOSEPH.—*Nrissers Stereoscopisches Atlas*, 1896.
- (20) JOSEPH.—*Dermat. Zeitsch.*, 1898.
- (21) JOSEPH.—*Berlin. Klinik*, 1902.
- (22) WEBER and KREIG.—*Brit. Journ. Derm.*, 1899.
- (23) GEBER.—*Ziemssen's Diseases of the Skin*, 1885.

